numerous tables containing the data for stations which possess observations extending more or less continuously over fifty years or more.

In a recent number of the *Meteorologische Zeitschrift* (January) Prof. Hofrat Hann has contributed a new determination of the mean temperature of the earth's atmosphere. In the second edition of his classical "Lehrbuch der Meteorologie," recently noted in this Journal, he gave us the results of a discussion of the material then available, but the publication of more data by Prof. Mohn dealing with the air temperature in the region of the North Pole renders a slight modification of the mean values necessary.

Prof. Mohn has just completed a study of the meteorological observations made during Nansen's memorable North Polar expedition in 1893–6, and has been able to make a new determination of the mean temperatures of the air for the parallels of latitude 60° to 90° north. These new values have enabled Prof. Hann to re-calculate afresh the mean temperature of the whole northern hemisphere, using the results obtained in the investigation of Spitaler for the parallels from 0° to 55° N. The value obtained for the mean of the northern hemisphere was finally 15°·1 C. For the southern hemisphere Prof. Hann had previously determined the value to be 13°·6 C., so that the mean value for the whole earth comes out as 14°·35 C. It is interesting to remark that the northern hemisphere appears to be 1°·5 C. warmer than the southern. Spitaler in 1886 came to a similar conclusion, his figures being:—

Northern hemisphere	15°·4 C.
Southern hemisphere	14°·8 ,,
Whole earth	15°·1 ,,
Excess of N. over S.	0°·6 ,,

Prof. Hann points out that the meteorological observations made during the recent Antarctic expeditions will be of special interest in relation to this question, since a new and better determination of the value for the southern hemisphere is rendered possible.

Attention is directed to the investigation of Prof. Supan, who formed the mean air temperatures into two groups, namely, east and west hemispheres, the dividing lines being 20° W. and 160° E. In this case the eastern hemisphere appears to be the warmer, as can be judged from the following mean temperatures calculated by Prof. Hann:—

	Hemisphere	
	West	East
North Pole to equator ...	14°·6 C. ...	15°·6 C.
North Pole to 30° N. ...	5°·0 ,, ...	5°·4 ,,
30° N. to equator	24°·1 ,, ...	25°·8 ,,
Equator to 30° S.	23°·1 ,, ...	23°·6 ,,
Equator to 50° S.	19°·6 ,, ...	19°·4 ,,

It is only when more southern latitudes are included in the regions investigated that the resulting values give an excess of temperature for the western hemisphere.

In the northern hemisphere the land exceeds the water surface, while the opposite is the case in the southern hemisphere. The figures given above for these districts indicate, therefore, that the land has a capacity for raising the mean temperature of the air, the temperature of the northern in excess of the southern hemisphere being 1°·5 C.

According to General Tilto, there is a greater proportion of land to water in the eastern than in the western hemisphere, the values being

	Per cent. land	Per cent. water
Western Hemisphere (80° N. to 70° S.) ...	17 ...	83
Eastern ,, ,, ,, ...	37 ...	63

From this, therefore, the eastern hemisphere should be warmer than the western. The above figures show that this is actually the case, thus corroborating the deductions made for the relative temperatures of the north and south hemispheres.

In an article which appeared in these columns in 1904 (vol. lxx., p. 177) entitled "A World-wide Barometric See-saw," an account was given of the results of a study by Sir Norman Lockyer and myself of barometric changes of short period, which brought to light the existence of two large regions on the earth's surface, antipodal to one another, which behaved in an inverse manner to each other. In this article a chart was given illustrating the distribution of the different types of pressure variation, and it was pointed out that the further any station was placed from the centres of the two main regions, namely, India and Cordoba, the less the barometric variations were like those of these two regions.

In a recent paper by Dr. Wilhelm Krebs, of Grossflottbek, entitled "Barometrische Ausgleichsbewegung in der Erdatmosphäre" (*Das Weltall*, Jahrgang 6, Heft 8, p. 118), the distribution of this short-period barometric change is discussed, and the author constructs an isophase chart from some of the data published in the original communication from which the above-mentioned article was an abstract.

The method adopted by Dr. Krebs is to call the Indian (Bombay) barometric change 100 per cent., and determine the percentage of the changes in relation to India at nineteen other stations distributed over the earth's surface. This procedure is really not valid, because there are two stations, namely, Bombay and Cordoba, which should both be taken as 100 per cent. each, the one positive and the other negative. Calling Bombay 100 per cent., Dr. Krebs deduces Cordoba as 31 per cent.! Since the Cordoba pressure change is the inverse of that of Bombay, it is difficult to see how the 31 per cent. is obtained. Further, the chart becomes very misleading, for the isophase lines connect up places which have a totally different short-period barometric variation. Thus, for instance, his 70 per cent. line passes through Norway and Sweden, European Russia, Arabia, the Indian Ocean, and Australia. The pressure changes in the latter three regions are closely similar, but all very different from those existing in the first three regions named.

As a matter of fact, the chart already referred to as published previously in this Journal was really an isophase map. In it each of the different signs there adopted, namely, +, +?, −, −?, &c., represented types of barometric changes, the + signs, for instance, representing all places which behaved like India, and therefore represented as 100 per cent. according to Dr. Krebs's method. A more minute differentiation than this seems at present impossible until a much larger number of stations are employed in the survey.

William J. S. Lockyer.

THE MINERAL WEALTH OF ALASKA.

Recent developments have shown that Alaska as a mining field stands in the front rank among the possessions of the United States. Its annual gold production represents a value of some 1,600,000*l*. It produces silver, copper, and coal in considerable quantities, and its recently discovered tin and petroleum deposits are of great promise. During the past year the investigation of the mineral resources of Alaska has been energetically carried on by the United States Geological Survey under adverse conditions, and the Bulletins (Nos. 259, 250, and 236) recently published by Mr. A. H. Brooks, Mr. G. C. Martin, and Mr. C. W. Wright afford striking evidence of the excellent work that is being done in this direction by officers of the survey. Attention has naturally been directed chiefly to the gold placers. The placers of the Seward Peninsula, a field embracing an area of 20,000 square miles, still hold the first place in gold production in Alaska. Seven distinct types of alluvial gold deposits are met with in Alaska:—

(1) Creek placers, at the level of small streams.

(2) Hillside placers, on slopes.

(3) Bench placers, in ancient stream deposits 50 feet to 300 feet above present streams.

(4) Gravel-plain placers, in the coastal plain of Seward Peninsula.

(5) Sea-beach placers, on shore to which waves have access.

(6) Lake-bed placers, in beds of present or ancient lakes.

(7) River-bar placers, on gravel flats near the beds of large streams.

The mining of placer gold in Alaska is carried on during June, July, August, and September; and mining operations are rendered difficult not only by the short available season, but also by the lack of fall in the streams, the poor supply

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of water and timber, the half-frozen condition of the gravel, and the high cost of labour and transport. In spite of these obstacles the wide and uniform distribution of alluvial gold, the healthy climate, and the proximity of the phenomenally rich goldfields of the British Yukon territory justify prospecting and mining for gold over so extensive an area. The methods of gravel and placer mining in vogue are well described by Mr. C. W. Purington. Hydraulic methods are the favourites, and the construction of the requisite ditches has gone on with great activity, about a hundred miles being under construction and a similar length in use. In the Porcupine district in south-eastern Alaska, near the international boundary, hydraulicing has proved economical. The gravel is attacked in this way, and sluice-boxes are lain on bed rock, everything being worked into them by the powerful stream from the hydraulic nozzle.

Of the gold-ore deposits in Alaska by far the most important is that of the Alaska-Treadwell mine on the eastern side of Douglas Island. The ore bodies consist of mineralised albite-diorite occurring in the form of intrusive dykes in black slates. The dykes are distributed throughout a zone about 3000 feet in width, extending along the strike for three miles. The ore consists mainly of rock impregnated with pyrites, in part filled by veins of calcite and quartz. The average value of the rock mined is 8*s.* per ton. The ore dykes have been developed along the dip for a distance of about 1000 feet. Hot ascending solutions, possibly of magmatic origin, appear to have been the cause of mineralisation, and the evidence is in favour of only one period of concentration.

None of the metals of the platinum series has yet been found in the Alaska alluvium, but stream tin discovered on the Anikovik River in 1900 has been found over an area of 450 square miles. During the season of 1904 development work on tin lodes was in progress at Lost River and Cape Mountain, and new discoveries of tin lodes were reported at Brooks Mountain, Ears Mountain, and in the Darby Mountains, all in Seward Peninsula.

The attempts to develop petroleum fields in Alaska which were begun in 1901 have been continued, but so far without any commercial production.

Promising surface indications of petroleum have, however, been found in the Controller Bay, Cook Inlet, and Cold Bay fields. Though only a few wells have been bored, Mr. Martin's studies have shown that there is ample justification for further prospecting, and that the Pacific Coast region of Alaska may prove an important source of illuminating oil. In this connection it is of interest to note that the Bering River coal is the best that has yet been found on the Pacific Coast. An average of twelve analyses showed 75·65 per cent. of fixed carbon, 15·06 per cent. of volatile matter, 7·97 per cent. of ash, 1·30 per cent. of moisture, and 1·24 per cent. of sulphur. Coal, mostly of a lignitic character, is also widely distributed in south-western Alaska, whilst the coals of the Cape Lisburne region are of two distinct classes, low-grade bituminous coal of Mesozoic age, and high-grade bituminous coal of Palæozoic age. The former covers an area of 300 square miles with 150 feet of coal in forty or fifty seams, ten of which seem to be of economic importance. The Palæozoic coals are also undeveloped. They occur in limited areas, and the beds are much crumpled and broken, so that mining will be difficult and expensive. The product will, however, probably command as good a price as the best coals shipped to Alaska.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Oxford.—The electors will proceed to the election of a Sibthorpian professor of rural economy on June 9. The professorship has now been made tenable for life, subject to the liability of the holder to vacate it by deprivation for sufficient cause. The present stipend of the professorship is about 700*l.* a year.

Cambridge.—Applications for the John Lucas Walker studentship, the holder of which must devote himself (or herself) to original research in pathology, are invited, and should be sent, accompanied by references—not testimonials—not later than May 8, to Prof. G. Sims Woodhead, Pathological Laboratory, New Museums, Cambridge, to whom also applications for further information regarding the studentship may be addressed. The studentship is of the annual value of 200*l.* (grants may also be made for assistance and apparatus), and is tenable, under certain conditions, for three years from July 1.

Mr. Earle has been appointed to succeed Sir A. Pedler as Director of Public Instruction in Bengal.

Dr. J. Moeller, of Gratz University, has been appointed professor of pharmacognosia in Vienna University in succession to Prof. von Vogl.

Prof. J. Precht has been appointed to succeed Prof. Dieterici as professor of experimental physics in the Technical High School, Hanover.

Prof. Dr. E. Knoevenagel has been appointed director of the Heidelberg University chemical laboratory in succession to Prof. Theodor Curtius, ex-prosector of the University; while Prof. A. Klages has been deputed to take Prof. Curtius's lectures on experimental organic chemistry.

It has been decided to add to the University of Nancy a new physical institute, toward the cost of which the Government has promised 300,000 francs, while a further contribution of 50,000 francs has also been announced. This will mean that, apart from buildings for the medical faculty, there have been added within quite recent years new institutes for chemistry, electrotechnics, and applied mechanics, whilst the brewing school has been newly organised.

It is announced in *Science* that Mr. Andrew Carnegie has given 400,000*l.*, in addition to previous gifts, for the maintenance of the Carnegie Technical Schools, Pittsburg. From the same source we learn that by the will of the late Andrew J. Dotger, of South Orange, N.J., the Tuskegee Institute will receive 131,000*l.* on the death of his wife. It is also interesting to record that about 10,000*l.* has already been raised for the new professorship of lumbering in the Yale Forest School of the 30,000*l.* which is sought as an endowment. In fourteen western States 8800*l.* was raised from sixty contributors.

Among the courses of lectures to be held during May, arranged for advanced students and others in connection with the University of London, the following may be mentioned. A course of about seven lectures on the morphology of the Bryophyta will be given at the Chelsea Physic Garden by Prof. J. B. Farmer, F.R.S., beginning on May 8; a course of eight lectures on the physiology of nerve will be delivered in the physiological laboratory of the University by Dr. N. H. Alcock, commencing on May 8; and a course of four lectures on the atmospheric circulation and its relation to weather will be given on May 1, 8, 15, and 24 by Dr. W. N. Shaw, F.R.S.

In the Journal of the Royal Sanitary Institute (vol. xxvii., No. 3) Dr. G. Reid gives drawings of a new type of elementary school now adopted by the Education Committee of Staffordshire. The central hall type of building hitherto in favour was found to present difficulties in making adequate provision for ventilation by natural means, and a plan of building was adopted in which one semi-detached hall would serve for three departments, the class-rooms being designed in pavilion form with veranda communication. The cost of erection of the new type is considerably less than that of the central hall type, the cost of schools to accommodate 1020 and 628 children respectively being 10*l.* 10*s.* and 11*l.* 1*s.* in the former case as compared with 15*l.*, which was the average cost per head of the central hall type of building.

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